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ABSTRACT

Research in the area of social cognition has suggesed that actual stimuli don't predict later judgments and responses as well as cognitive representations of and cognitive responses to those stimuli, in the form of attitudes, impressions, or causal attributions. To identify the factors most important in predicting adolescent smoking, a 4-year longitudinal study was conducted using a sample of students in grades 6 through 12. Three major categories of factors were used: (1) proximal variables (attitudes, beliefs, intentions) from Ajzen and Fishbein's (1970) model of behavior prediction; (2) general personality and perceived environment factors from Jessor and Jessor's (1977) problem behavior theory; and (3) perceived smoking environment factors. These factors were assessed across sex, age, and stage of smoking. The results supported the utility of a cognitive social-psychological approach to understanding adolescent smoking behavior. For adolescents who had already experimented with cigarettes, increases to regular smoking were best predicted by attitudes and beliefs about smoking as well as behavioral intentions to smoke (i.e., the Ajzen and Fishbein variables). Those who tried smoking but did not become regular smokers placed higher values on independence and had higher expectations for actually attaining independence, which may have helped reduce peer influence. In contrast, initial experience with smoking was more dependent on the immediate situational context. Moreover, adolescents grossly overestimated the actual extent of smoking among adults and teenagers. Self-image and social image were also related to adolescents' smoking decisions. The findings should prove useful in designing more effective interventions for primary prevention of smoking among adolescents. (JAC)

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BECOMING A CIGARETTE SMOKER: A SOCIAL-PSYCHOLOGICAL PERSPECTIVE

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Becoming a Cigarette Smoker: A Social-Psychological Perspective

To help understand adolescent cigarette smoking initiation, our research program has drawn on a variety of approaches. The purpose of the present paper is to offer a brief look at several of these approaches, along with data representing each approach and some of their implications for smoking prevention.

The most general and overriding conceptual framework guiding this work takes the perspective of cognitive social psychology. The most important feature of this approach is its focus on individuals' cognitive responses to and interpretations of stimulus situations as predictors of judgments and behavior rather than on objective reality and stimulus conditions. Ten years or more of data in the area of social cognition now make it clear that actual stimuli and subjects' memory for those events don't predict later judgments and responses as well as the cognitive representations of and cognitive responses to those stimuli, be they in the form of attitudes, impressions, or causal attributions (e.g., Greenwald, 1968; Lingle & Ostrom, 1981). In adopting this approach, we therefore focus on the importance of personal beliefs and cognitive processes and structures as proximal determinants of negative health practices. We try to identify the inferences and generalizations that people derive from their experiences and to understand how these get organized into a coherent system or representation. However, our concern isn't simply with how adolescents think about cigarette smoking and health-relevant issues, but how these cognitive representations then get translated into subsequent health-relevant decisions and behaviors.

Predicting transitions in smoking behavior: A longitudinal study.

Our major research effort has been a four year longitudinal questionnaire study done in Bloomington, Indiana. The primary aim of this project has been to identify the factors most important in predicting adolescent smoking

adoption and to develop a profile of the nonsmoking adolescent who is most at risk to become a smoker. In this work, three major categories of factors have been used. Table 1 identitifies the specific variables within each category.

1. Proximal variables from Ajzen & Fishbein's (1970) model of behavior prediction. These include specific self-relevant attitudes and beliefs about cigarette smoking, beliefs about the expectations of significant others (normative beliefs), and behavioral intentions.

2. General personality and perceived environment factors from Jessor & Jessor's (1977) problem behavior theory. As opposed to Ajzen & Fishbein's approach, Jessor & Jessor include general personality and perceived environment factors not specific to the behavior as predictors of premature transitions to a variety of adult activities in violation of age-norms.

3. Perceived smoking environment factors. A social learning view sees the major influence on adolescent smoking as the presence of environmental models and social systems that support smoking. To evaluate the importance of smoking models, we have included items that ask about the smoking habits of parents, siblings, and peers, adolescents' perceptions of smoking prevalence, and their level of direct experience with smoking.

In addition to specifying the relative contributions of these three categories of factors, we are also able to identify the differential importance of these factors across sex, age, and stage of smoking. Findings in both the social and developmental psychology literatures suggest that the process of smoking initiation may be different at different ages. Research by Berndt (1979) and Krosnick & Judd (1982) suggest that peer influences on smoking initiation may be particularly important for beginning high school students. In addition, Jessor & Jessor's (1977) problem behavior theory suggests that deviance prone personality characteristics will be more important the more the behavior is deviant within the adolescent's social context. Since smoking is

less frequent and less normative among middle school adolescents, general personality characteristics may be more important predictors of smoking initiation among younger adolescents.

Factors that influence smoking initiation may also differ for boys and girls. Research on adolescence has suggested that girls may be generally more vulnerable to external influence (Margulies et al., 1977). In support of this, parental environment has been shown to be more strongly related to general substance use among girls than boys (see Chassin, in press, for a review). These findings suggest that smoking environment variables may be more important for smoking initiation among girls than boys.

In addition to these age and sex differences, it is important to recognize that smoking initiation may not involve a single transition from never smoking to regular smoking. The initiation process is better conceptualized in terms of multiple stages (Flay et al., 1982; Leventhal & Cleary, 1980) with at least two major transitions: from never smoking to experimentation and from experimental use to regular smoking. These transitions may involve quite different mechanisms. For example, Flay et al. (1982) proposed a stage model for smoking initiation in which family models were more important at early transitions while attitudes were more important in later transitions.

The role of the three types of factors has been tested in a group-administered longitudinal questionnaire study in which self-reports of smoking were validated with a bogus pipeline procedure (Evans, Hansen, & Mittelmark, 1977). Subjects were 6-12 graders in a county-wide public school system. Change in subjects' smoking status over a one year follow-up period was predicted from our social psychological variables. These data are summarized below. A more complete description can be found in Chassin et al. (1983).

<u>Comparison of the Predictive Ability of the Ajzen & Fishbein, Jessor & Jessor, and Perceived Smoking Environment Variables.</u>

Multiple regression procedures were used to evaluate the predictive ability of the three categories of variables. Significant prediction was achieved by each category of variables for all subgroups with the exception of the Jessor and Jessor category for girls who were Triers at Time 1 and the smoking environment variables for Middle School Triers. Comparisons of the relative success of each category can be made by inspecting the percentage of variance accounted for (see Table 2).

For the Never Smokers as a whole, the smoking environment and Jessor and Jessor variables accounted for greater amounts of adjusted variance than did the Ajzen and Fishbein variables. The smoking environment variables were more important for middle school than for high school subjects, and the Jessor and Jessor variables were more important for girls than for boys.

In contrast, for the Triers at Time 1 the Ajzen and Fishbein variables were consistently the best predictors of later transition to increased smoking, accounting for between 7.9 and 19.6 per cent of the variance. The Jessor and Jessor factors were relatively more important for boys and for middle school subjects, and the smoking environment variables were relatively more important for girls and high school subjects.

A related question is the extent to which each factor contributes uniquely to the prediction of smoking transition. In order to answer this question, hierarchical multiple regressions were performed, separately for Never Smokers and Triers at Time 1. For both groups, the addition of each of the clusters of variables significantly increased the prediction. Thus, all three clusters of factors added unique variance in the prediction of smoking transition.

The Role of Specific Variables Within Each Cluster.

While the above analyses describe the contribution of each cluster of variables, it is also important to examine more carefully the contribution of specific factors within each cluster. The specific factors that characterize

high risk adolescents are important for intervention programs in both describing the target audience for prevention messages and pinpointing the factors that must be addressed. The specific factors that are most important to smoking transitions were identified from discriminant function analyses. These analyses distinguished among subjects who did and did not later make a transition to increased smoking status (see Table 3).

For adolescents who had already experimented with cigarettes, increases to regular smoking were best predicted by attitudes and beliefs about smoking as well as behavioral intentions to smoke (i.e., the Ajzen & Fishbein variables). Note that, as Ajzen and Fishbein (1970) suggest, behavioral intentions at Year 1 were consistently the best predictor of smoking transitions at Year 2. This is one indication that cross-sectional studies of smoking intentions and their correlates can serve as a time efficient way to understand adolescent smoking initiation. That is, hypotheses about factors that affect smoking initiation can be tested by looking at their relation to intentions, rather than change in actual behavior over a prolonged period of time. In fact, in our studies, the same factors that predict behavioral intentions at a single time of measurement also predict actual changes in behavior over a one year period (Chassin et al., 1981a).

The fact that attitudes, beliefs, and intentions predicted the behavior of Triers better than Never Smokers is consistent with previous research in suggesting that having some direct experience with a behavior leads to the formation of attitudes that are held with more confidence and that better predict behavor (Regan & Fazio, 1977). For prevention programs, this finding suggests that cognitive interventions aimed at changing attitudes and beliefs about smoking will be more effective in altering the smoking behavior of Triers than of Never Smokers. Unfortunately, these Triers may also be somewhat harder

to influence because their attitudes should be held with greater confidence (Sherman et al., 1982; Regan & Fazio, 1977).

The only Jessor & Jessor variables that were important predictors of transition for Triers were subjects' values and expectations concerning independence. Triers who did not go on to regular smoking placed higher values on independence and had higher expectations for actually attaining independence. It is possible that such high values and expectations concerning independence help these adolescents resist the influences of peer pressure or smoking models in their environment. Alternatively, adolescents who place high value on independence may not increase their level of smoking because they do not like the notion of losing their perceived freedom by becoming dependent or "hooked" on cigarettes (Brehm, 1966).

In contrast to the Triers, the smoking initiation of Never Smokers was better predicted by the Jessor & Jessor distal variables and by perceived smoking environment variables. Thus, it appears that adolescents' initial experience with cigarette smoking is more dependent on the immediate situational context (combined with a "deviance prone" vulnerable adolescent) than on long term attitudes and beliefs about smoking. The importance of peer and parent smoking models supports the utility of prevention programs that are aimed at teaching nonsmoking adolescents to "say no" to environmental pressures to smoke and which prepare adolescents with behavioral responses to such situations (Evans et al., in press). However, the importance of older siblings' smoking suggests that these campaigns should include techniques for coping with sibling modeling along with their current emphasis on resisting parental, peer, and media models. Moreover, adolescents at risk to begin smoking grossly overestimated the actual extent of smoking among adults and teenagers. Correcting adolescents' misperceptions about the extent of smoking in the population may be a useful addition to prevention campaigns.

An interesting stage difference emerged for the role of family smoking models as predictors of future transition. Consistent with Flay et al. (1982), the presence of parents and older siblings who smoked was more important to the initiation of smoking than to later transition from experimental to habitual smoking. One role that family members may play in the initiation process is to provide available cigarettes and opportunities for initial experimentation. After this initial experimentation, however, adolescents' subsequent smoking decisions may be based on different factors, perhaps derived from their own experience with cigarettes. Once an adolescent begins to smoke, interventions that attempt to combat family influences may be less important in preventing an increase in smoking behavior.

The Role of Self-Concept and Social Image Factors

In addition to our large-scale longitudinal study, we have chosen to focus in more detail on the role of self-concept and social image factors in adolescent smoking initiation. According to Leventhal and Cleary (1980), adolescents perceive and evaluate the social image associated with smoking, as well as perceiving and evaluating their own self-images. If the smoker image fits with their own view of themselves or of the way they would like to be, they may be motivated to smoke, as suggested in social psychological consistency and self-enhancement theories (Burke & Tully, 1977; Kaplan, 1980). Research and theory in social development suggests that adolescents will be particularly motivated by social image factors. Adolescence has been considered a time of heightened self-consciousness and preoccupation with social image. In fact, Elkind (1967) has suggested that adolescents behave as if they were in front of an "imaginary audience" which was judging their behavior.

To date, we have conducted several studies of the social image of adolescent smoking in relation to self-images and ideal self-images. We have

examined the social image using semantic differential instruments both by asking adolescent subjects to describe stereotypic teenage smokers and nonsmokers (Chassin et al., 1981b) and by asking subjects to rate a slide of a peer model posed either with or without a cigarette (Barton et al., 1982). In the latter design, subjects are unaware that cigarette smoking is the variable of interest so that social desirability response biases are minimized. Both methods produced similar results in describing a smoking image that is ambivalent with many negative attributes (e.g., unhealthy, bad, bad at schoolwork) but also with other characteristics that might be considered social assets in adolescents (e.g., toughness, precocity, sociability).

Self-image and social image factors are also related to adolescents' smoking decisions. For example, smokers and nonsmokers differ in their self-concepts such that smokers' views of themselves are more similar to a smoker image (Chassin et al., 1981b). Moreover, among nonsmokers, those whose self-concepts are more similar to a smoker image are more likely to plan to smoke in the future. Thus, consistency between adolescents' views of themselves and their views of a smoker image is related to smoking decisions.

A further question is whether similarity between adolescents' ideal selves and a smoker image might be related to smoking. Such a finding would suggest that adolescents aspire to a smoking image. However, perhaps because the image is an ambivalent one, adolescents' overall ideal self-concepts rarely match a smoker image. Still, we have found that adolescents whose ideals are similar to some aspects of the smoker image are more likely to plan to smoke in the future. The pattern of findings for ideal self-concepts also changes with age. For early adolescents (6th graders), intentions to smoke were related to the perceived negative aspects of smoking, which serve as potential deterrents. For middle adolescents (10th graders), intentions were related to perceived positive qualities of smoking (Barton et al., 1982).

These findings suggest that adolescent cigarette smoking carries some social benefits in terms of projecting an image of toughness, precocity, and sociability. Moreover, these social image benefits are related to adolescents' smoking decisions. This being the case, previous views of adolescent smoking may be oversimplistic in suggesting that adolescents smoke because they lack the skills to "say no" to peer pressure. As Leventhal & Cleary (1980) have pointed out, adolescents may not want to say no. In fact, according to our data, adolescents may derive real or perceived social benefits from saying yes to smoking. Our data suggest that a useful component to smoking prevention programs may include changing the social image associated with smoking or giving adolescents other ways to project an image of toughness, precocity, and sociability.

In summary, our findings to date support the utility of a cognitive social-psychological approach to understanding adolescent cigarette smoking initiation. Adolescents' perceptions of the smoking environment, their attitudes and beliefs specific to cigarette smoking, and their more general "deviance prone" personality and perceived environment characteristics all successfully predict later smoking transitions. In addition, the perceived social image or stereotype of the smoker may function as a motivator of smoking initiation both as an attempt to achieve consistency with an existing self-image or as a way of achieving aspects of one's ideal self-image.

Aside from demonstrating the general importance of these perceptions and beliefs, our research has also identified several meaningful age and stage differences. It is important that research in adolescent cigarette smoking be grounded in larger theories of adolescent social development. Finally, an understanding of the adolescent smoking initiation process is necessary for application to intervention strategies. Clearly our hope is that our findings

will form a data base for the construction of more effective interventions for the primary prevention of cigarette smoking among adolescents.

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Table 1. VARIABLES IN THE LONGITUDINAL STUDY.

Ajzen & Fishbein Proximal Variables.

Attitudes towards the act of smoking
Normative beliefs about smoking
Behavioral intentions to smoke in the future

Jessor & Jessor Distal Variables.

Personality system:

Locus of Control
Value on Independence
Expectations for Independence
Value on Academics
Expectations for Academics
Tolerance for Deviance
Discrepancy between Values and Expectations for Academics
Discrepancy between Values and Expectations for Independence

Perceived environment system:

Parental Expectations
Parental Support
Parental Control
Parental Agreement
Parent-Friend Agreement
Friends' Expectations
Friends' Support
Friends' Control
Subject-Friend Agreement

Perceived Smoking Environment

Parental Smoking
Sibling Smoking
Peer Smoking
Perceptions of Smoking Prevalence among: Men, Women, Boys, Girls
Direct Experience with Smoking

Table 2. PREDICTIVE POWER OF THE AJZEN AND FISHBEIN, JESSOR AND JESSOR, AND SMOKING ENVIRONMENT MODELS.

	MODELS								
	Ajzen & Fishbein (3 variables)			Jessor & Jessor (17 variables)			Smoking Environment (8 variables)		
	R	Percent Variance Explained[a]	F	R	Percent Variance Explained[a]	F	R	Percent Variance Explained[a]	F
Never Smokers (N)									
All (1239)	.18	3.1	14.3***	.25	5.0	4.8***	.25	5.4	9.9***
Boys (545)	.22	4.3	9.1***	.26	3.5	2.2**	.25	5.1	4.7***
Girls (693)	.15	1.8	5.3***	.30	6.8	4.0***	.28	6.6	7.1***
Middle School (545)	.18	2.6	5.8***	.28	4.7	2.6**	.33	9.4	8.1***
High School (693)	.19	3.2	8.6***	.27	5.0	3.2***	.21	3.2	3.8***
TRIERS (N)									
All (745)	.30	8.6	24.3***	.26	4.4	3.0***	.26	5.7	6.6***
Boys (395)	.31	9.0	14.1***	.32	6.4	2.6***	.23	3.5	2.8**
Girls (350)	.29	7.9	10.9***	.21	0	0.9	.30	7.1	4.3***
Middle School (177)	.46	19.6	15.3***	.46	12.5	2.5**	.28	3.6	1.8
High School (564)	.31	9.4	20.4***	.25	3.2	2.1**	.27	6.1	5.6***

[a]All percentages of explained variance have been adjusted for sample size and number of predictor variables.

*
**p < .05
***p < .01
p < .001

Table 3 STRUCTURAL COEFFICIENTS OF .30 OR BETTER FROM DISCRIMINANT ANALYSES COMPARING TRANSITION AND NO-TRANSITION GROUPS

	Never Smokers					Triers				
	All	M	F	M.S.	H.S.	All	M	F	M.S.	H.S.
Ajzen & Fishbein										
Intentions	.50	.53	.35	.37	.52	.69	.67	.62	.33	.69
Smoking Attitudes	.40	.37	.32	.33	.37	.48	.47	.44	.37	.39
Normative Beliefs						.42	.53	.32	.60	
Jessor & Jessor										
Locus of Control	.44		.46	.45	.35		.33			
Academic Values		-.30								
Academic Expectations	-.41	-.38	-.33	-.30	-.43		-.34		-.46	
Independence Values							-.35		-.33	
Independence Expectations						-.34	-.49		-.38	
Tolerance for Deviance	-.38		-.40	-.34	-.33		-.38			
Parental Agreement	-.31				-.30	-.36	-.41		-.36	
Agreement with Friends	-.30				-.30					
Smoking Environment										
Parental Smoking	.38	.36	.30	.42						
Friends Smoking	.49	.43	.42	.40	.46	.54	.48	.48		.53
Older Sib Smoking	.45		.53	.58						
Prevalence est, Boys	.37	.40	.31	.40		.34		.35		.38
Prevalence est, Girls	.43	.45	.36	.44	.33			.33		.30
Prevalence est, Men	.36	.39			.37					
Prevalence est, Women	.35	.31	.35		.34					
Direct Experience	.30		.36	.35				.31		